

UNITED STATES PATENT AND TRADEMARK OFFICE
CERTIFICATE OF CORRECTION

PATENT NO. : 7,233,623 B1

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APPLICATION NO. : 09/390554

DATED : June 19, 2007

INVENTOR(S) : Pau et al.

It is certified that error appears in the above-identified patent and that said Letters Patent is hereby corrected as shown below:

Column 7, Line 1-8 Delete:

$$\text{Delete: } \left[\begin{array}{ccccccc} y[0] & y[1] & \cdots & y[7] \\ \vdots & \vdots & \vdots & \vdots \\ y[54] & y[55] & \cdots & y[63] \end{array} \right] = \left[\begin{array}{ccccccc} l[0] & l[1] & l[4] & l[5] & m[0] & m[1] & m[4] & m[5] \\ l[2] & l[3] & l[6] & l[7] & m[2] & m[3] & m[6] & m[7] \\ n[0] & n[1] & n[4] & n[5] & o[0] & o[1] & o[4] & o[5] \\ n[2] & n[3] & n[6] & n[7] & o[2] & o[3] & o[6] & o[7] \\ p[0] & p[1] & p[4] & p[5] & q[0] & q[1] & q[4] & q[5] \\ p[2] & p[2] & p[6] & p[7] & q[2] & q[3] & q[6] & q[7] \\ r[0] & r[1] & r[4] & r[5] & s[0] & s[1] & s[4] & s[5] \\ r[2] & r[2] & r[6] & r[7] & s[2] & s[3] & s[6] & s[7] \end{array} \right] \text{ "}$$

Insert:

$$\text{Insert: } \left[\begin{array}{ccccccc} y[0] & y[1] & \cdots & y[7] \\ \vdots & \vdots & \vdots & \vdots \\ y[54] & y[55] & \cdots & y[63] \end{array} \right] = \left[\begin{array}{ccccccc} l[0] & l[1] & l[4] & l[5] & m[0] & m[1] & m[4] & m[5] \\ l[2] & l[3] & l[6] & l[7] & m[2] & m[3] & m[6] & m[7] \\ n[0] & n[1] & n[4] & n[5] & o[0] & o[1] & o[4] & o[5] \\ n[2] & n[3] & n[6] & n[7] & o[2] & o[3] & o[6] & o[7] \\ p[0] & p[1] & p[4] & p[5] & q[0] & q[1] & q[4] & q[5] \\ p[2] & p[3] & p[6] & p[7] & q[2] & q[3] & q[6] & q[7] \\ r[0] & r[1] & r[4] & r[5] & s[0] & s[1] & s[4] & s[5] \\ r[2] & r[3] & r[6] & r[7] & s[2] & s[3] & s[6] & s[7] \end{array} \right] \text{ --}$$

Column 7, Line 42 Delete:

$$\text{Delete: } \left\{ B_{3,i} \right\}_{i=0}^3 = \{ x_{2,0}, x_{0,1}, x_{3,2}, x_{1,3} \} \text{ "}$$

Insert:

$$\text{Insert: } \left\{ B_{3,i} \right\}_{i=0}^3 = \{ x_{2,0}, x_{0,1}, x_{3,2}, x_{1,3} \} ,$$

$$\left\{ B_{1,i} \right\}_{i=0}^3 = \{ x_{3,0}, x_{2,1}, x_{1,2}, x_{0,3} \} \text{ --}$$

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It is certified that error appears in the above-identified patent and that said Letters Patent is hereby corrected as shown below:

Column 9, Line 22-31 Delete:

$$\text{“ } p = \begin{bmatrix} A_1[0]^{1,0} \\ A_3[0]^{1,0} \\ B_3[0]^{1,0} \\ B_1[0]^{1,0} \\ A_1[0]^{1,1} \\ A_3[0]^{1,1} \\ B_3[0]^{1,1} \\ B_1[0]^{1,1} \end{bmatrix}, \quad p = \begin{bmatrix} A_1[1]^{1,0} \\ A_3[1]^{1,0} \\ B_3[1]^{1,0} \\ B_1[1]^{1,0} \\ A_1[1]^{1,1} \\ A_3[1]^{1,1} \\ B_3[1]^{1,1} \\ B_1[1]^{1,1} \end{bmatrix}, \quad q = \begin{bmatrix} A_1[2]^{1,0} \\ A_3[2]^{1,0} \\ B_3[2]^{1,0} \\ B_1[2]^{1,0} \\ A_1[2]^{1,1} \\ A_3[2]^{1,1} \\ B_3[2]^{1,1} \\ B_1[2]^{1,1} \end{bmatrix}, \quad s = \begin{bmatrix} A_1[3]^{1,0} \\ A_3[3]^{1,0} \\ B_3[3]^{1,0} \\ B_1[3]^{1,0} \\ A_1[3]^{1,1} \\ A_3[3]^{1,1} \\ B_3[3]^{1,1} \\ B_1[3]^{1,1} \end{bmatrix} \text{ ”}$$

Insert:

$$\text{-- } p = \begin{bmatrix} A_1[0]^{1,0} \\ A_3[0]^{1,0} \\ B_3[0]^{1,0} \\ B_1[0]^{1,0} \\ A_1[0]^{1,1} \\ A_3[0]^{1,1} \\ B_3[0]^{1,1} \\ B_1[0]^{1,1} \end{bmatrix}, \quad q = \begin{bmatrix} A_1[1]^{1,0} \\ A_3[1]^{1,0} \\ B_3[1]^{1,0} \\ B_1[1]^{1,0} \\ A_1[1]^{1,1} \\ A_3[1]^{1,1} \\ B_3[1]^{1,1} \\ B_1[1]^{1,1} \end{bmatrix}, \quad r = \begin{bmatrix} A_1[2]^{1,0} \\ A_3[2]^{1,0} \\ B_3[2]^{1,0} \\ B_1[2]^{1,0} \\ A_1[2]^{1,1} \\ A_3[2]^{1,1} \\ B_3[2]^{1,1} \\ B_1[2]^{1,1} \end{bmatrix}, \quad s = \begin{bmatrix} A_1[3]^{1,0} \\ A_3[3]^{1,0} \\ B_3[3]^{1,0} \\ B_1[3]^{1,0} \\ A_1[3]^{1,1} \\ A_3[3]^{1,1} \\ B_3[3]^{1,1} \\ B_1[3]^{1,1} \end{bmatrix} \text{ -- }$$

Column 10, Line 22

Delete: “ $t = \begin{cases} 1 & \text{per stage} = 0 \\ 2 & \text{per stage} = 1 \end{cases}$ ”

Insert: -- $t = \begin{cases} 1 & \text{per stage} = 0 \\ 2 & \text{per stage} = 1 \end{cases}$ --

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It is certified that error appears in the above-identified patent and that said Letters Patent is hereby corrected as shown below:

Column 12, Line 28-43 Delete: “ $y_i = [y_{i,0} \ y_{i,1} \ \dots \ y_{i,7}]$ ”

$$\{f_{0,r}\}_{r=0}^7 = DCT(\{A_{1,i}\}_{i=0}^7), \{f_{4,r}\}_{r=0}^7 = DCT(\{B_{7,i}\}_{i=0}^7),$$

$$\{f_{1,r}\}_{r=0}^7 = DCT(\{A_{3,i}\}_{i=0}^7), \{f_{5,r}\}_{r=0}^7 = DCT(\{B_{5,i}\}_{i=0}^7),$$

$$\{f_{2,r}\}_{r=0}^7 = DCT(\{A_{5,i}\}_{i=0}^7), \{f_{6,r}\}_{r=0}^7 = DCT(\{B_{3,i}\}_{i=0}^7),$$

$$\{f_{3,r}\}_{r=0}^7 = DCT(\{A_{7,i}\}_{i=0}^7), \{f_{7,r}\}_{r=0}^7 = DCT(\{B_{1,i}\}_{i=0}^7),$$

$$\{A_{1,i}\}_{i=0}^7 = \{x_{0,0} \ x_{1,1} \ x_{2,2} \ x_{3,3} \ x_{4,4} \ x_{5,5} \ x_{6,6} \ x_{7,7}\},$$

$$\{A_{3,i}\}_{i=0}^7 = \{x_{1,0} \ x_{4,1} \ x_{7,2} \ x_{5,3} \ x_{2,4} \ x_{0,5} \ x_{3,6} \ x_{6,7}\},$$

$$\{A_{5,i}\}_{i=0}^7 = \{x_{2,0} \ x_{7,1} \ x_{3,2} \ x_{1,3} \ x_{6,4} \ x_{4,5} \ x_{0,6} \ x_{5,7}\},$$

$$\{A_{7,i}\}_{i=0}^7 = \{x_{3,0} \ x_{5,1} \ x_{1,2} \ x_{7,3} \ x_{0,4} \ x_{6,5} \ x_{2,6} \ x_{4,7}\},$$

$$\{B_{7,i}\}_{i=0}^7 = \{x_{4,0} \ x_{2,1} \ x_{6,2} \ x_{0,3} \ x_{7,4} \ x_{1,5} \ x_{5,6} \ x_{3,7}\},$$

$$\{B_{5,i}\}_{i=0}^7 = \{x_{5,0} \ x_{0,1} \ x_{4,2} \ x_{6,3} \ x_{1,4} \ x_{3,5} \ x_{7,6} \ x_{2,7}\},$$

$$\{B_{3,i}\}_{i=0}^7 = \{x_{6,0} \ x_{3,1} \ x_{0,2} \ x_{2,3} \ x_{5,4} \ x_{7,5} \ x_{4,6} \ x_{1,7}\},$$

$$\{B_{1,i}\}_{i=0}^7 = \{x_{7,0} \ x_{6,1} \ x_{5,2} \ x_{4,3} \ x_{3,4} \ x_{2,5} \ x_{1,6} \ x_{0,7}\} ”$$

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It is certified that error appears in the above-identified patent and that said Letters Patent is hereby corrected as shown below:

Column 12, Line 28 (Cont.)

Insert:

$$- y_i = [y_{i,0} \ y_{i,1} \ \cdots \ y_{i,7}]$$

$$\{f_{0,r}\}_{r=0}^7 = DCT(\{A_{1,i}\}_{i=0}^7), \{f_{4,r}\}_{r=0}^7 = DCT(\{B_{7,i}\}_{i=0}^7),$$

$$\{f_{1,r}\}_{r=0}^7 = DCT(\{A_{3,i}\}_{i=0}^7), \{f_{5,r}\}_{r=0}^7 = DCT(\{B_{5,i}\}_{i=0}^7),$$

$$\{f_{2,r}\}_{r=0}^7 = DCT(\{A_{5,i}\}_{i=0}^7), \{f_{6,r}\}_{r=0}^7 = DCT(\{B_{3,i}\}_{i=0}^7),$$

$$\{f_{3,r}\}_{r=0}^7 = DCT(\{A_{7,i}\}_{i=0}^7), \{f_{7,r}\}_{r=0}^7 = DCT(\{B_{1,i}\}_{i=0}^7),$$

$$\{A_{1,i}\}_{i=0}^7 = \{x_{0,0} \ x_{1,1} \ x_{2,2} \ x_{3,3} \ x_{4,4} \ x_{5,5} \ x_{6,6} \ x_{7,7}\},$$

$$\{A_{3,i}\}_{i=0}^7 = \{x_{1,0} \ x_{4,1} \ x_{7,2} \ x_{5,3} \ x_{2,4} \ x_{0,5} \ x_{3,6} \ x_{6,7}\},$$

$$\{A_{5,i}\}_{i=0}^7 = \{x_{2,0} \ x_{7,1} \ x_{3,2} \ x_{1,3} \ x_{6,4} \ x_{4,5} \ x_{0,6} \ x_{5,7}\},$$

$$\{A_{7,i}\}_{i=0}^7 = \{x_{3,0} \ x_{5,1} \ x_{1,2} \ x_{7,3} \ x_{0,4} \ x_{6,5} \ x_{2,6} \ x_{4,7}\},$$

$$\{B_{7,i}\}_{i=0}^7 = \{x_{4,0} \ x_{2,1} \ x_{6,2} \ x_{0,3} \ x_{7,4} \ x_{1,5} \ x_{5,6} \ x_{3,7}\},$$

$$\{B_{5,i}\}_{i=0}^7 = \{x_{5,0} \ x_{0,1} \ x_{4,2} \ x_{6,3} \ x_{1,4} \ x_{3,5} \ x_{7,6} \ x_{2,7}\},$$

$$\{B_{3,i}\}_{i=0}^7 = \{x_{6,0} \ x_{3,1} \ x_{0,2} \ x_{2,3} \ x_{5,4} \ x_{7,5} \ x_{4,6} \ x_{1,7}\},$$

$$\{B_{1,i}\}_{i=0}^7 = \{x_{7,0} \ x_{6,1} \ x_{5,2} \ x_{4,3} \ x_{3,4} \ x_{2,5} \ x_{1,6} \ x_{0,7}\} --$$

Column 15, Line 56

Delete: "two stage"

Insert: --two stages--

Column 20, Line 67

Delete: " {l[0],m[0],n[0],o[0]} is }a[0],b[0],c[0],d[0]} ,

Insert: -- {l[0],m[0],n[0],o[0]} is {a[0],b[0],c[0],d[0]} --

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It is certified that error appears in the above-identified patent and that said Letters Patent is hereby corrected as shown below:

Column 21, Line 3 Delete: “ $\{a[0], b[0], c[0], d[0]\}$ ”
 Insert: -- $\{a[0], b[0], c[0], d[0]\}$ --

Column 22, Line 30 Delete: “1'vector”
 Insert: --1' vector--

Column 24, Line 5 Delete: “ $= \begin{cases} 2C_8^3 \times I_{8 \times 8} & \text{per stage} = 0 \\ -(H_6)_8 & \text{per stage} = 1 \end{cases}$ ”
 Insert: -- $B = \begin{cases} 2C_8^3 \times I_{8 \times 8} & \text{per stage} = 0 \\ -(H_6)_8 & \text{per stage} = 1 \end{cases}$ --

Column 24, Line 10 Delete: “ $= \begin{cases} 2C_4^1 \times I_{8 \times 8} & \text{per stage} = 0 \\ (H_4)_8 & \text{per stage} = 1 \end{cases}$ ”
 Insert: -- $C = \begin{cases} 2C_4^1 \times I_{8 \times 8} & \text{per stage} = 0 \\ (H_4)_8 & \text{per stage} = 1 \end{cases}$ --

Signed and Sealed this

Sixth Day of May, 2008



JON W. DUDAS
Director of the United States Patent and Trademark Office